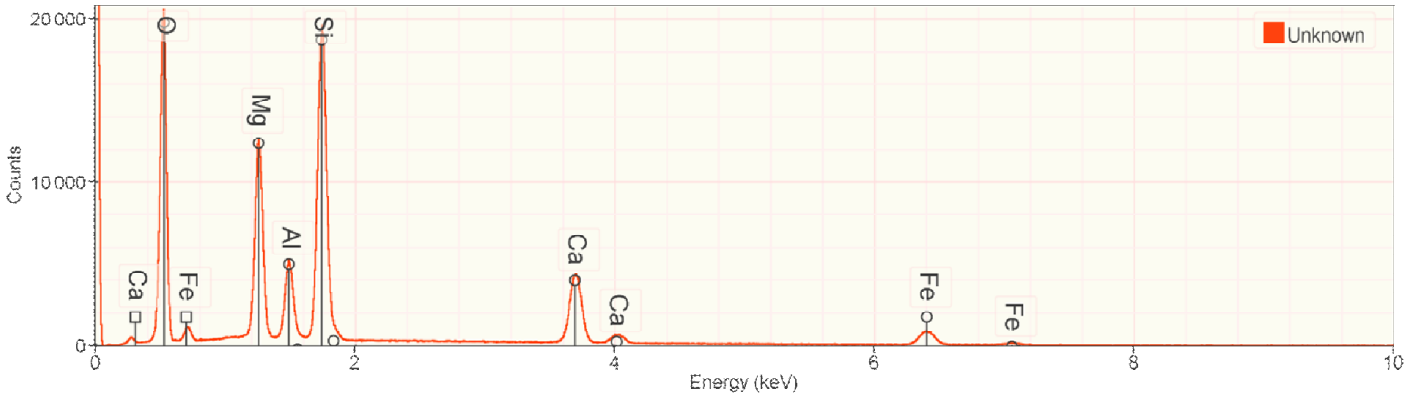
Standards vs References

Why do we sometimes need reference spectra in addition to standards?

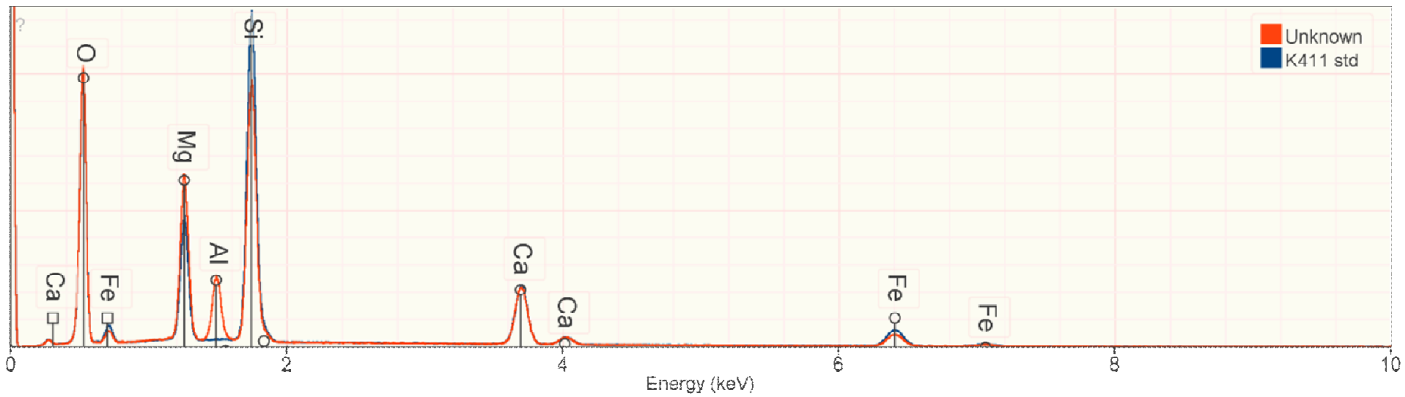


Simple standards:

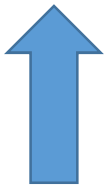
- Mg: Pure Mg
- Al: Pure Al
- Si: Pure Si
- Ca: CaF_2
- Fe: Pure Fe
- O: SiO_2

Like standards:

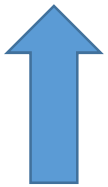
- Mg: K411 glass
- Al: Pure Al
- Si: K411 glass
- Ca: K411 glass
- Fe: K411 glass
- O: K411 glass



IUPAC	Standard	ZAF	Standard	ZAF
O All	SiO2	0.8037	K411	1.002
Mg All	Pure Mg	0.6695	K411	1.0325
Al All	Pure Al	0.6766	Al	0.6766
Si All	Pure Si	0.7569	K411	0.9558
Ca L-family	CaF2	0.43	K411	0.9873
Ca K-family	CaF2	0.9295	K411	0.9941
Fe L-family	Pure Fe	0.5981	K411	1.0031
Fe Kα	Pure Fe	0.8195	K411	0.9948
Fe Kβ	Pure Fe	0.8204	K411	0.9947

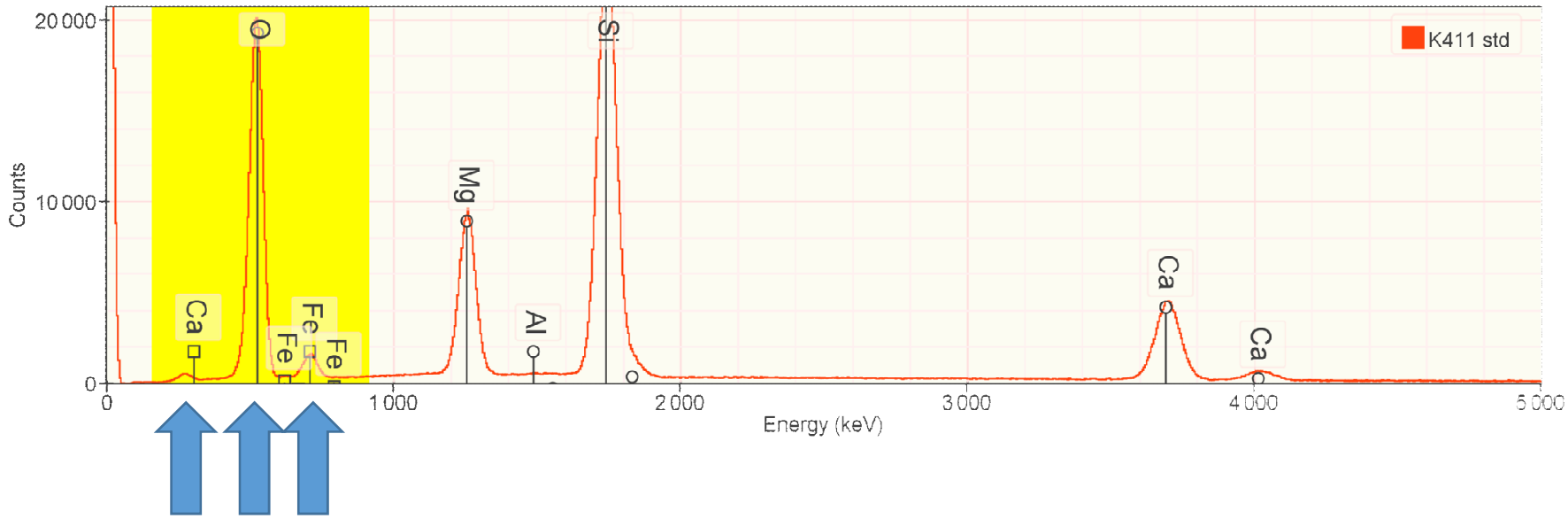


Significant corrections.



Close to unity!

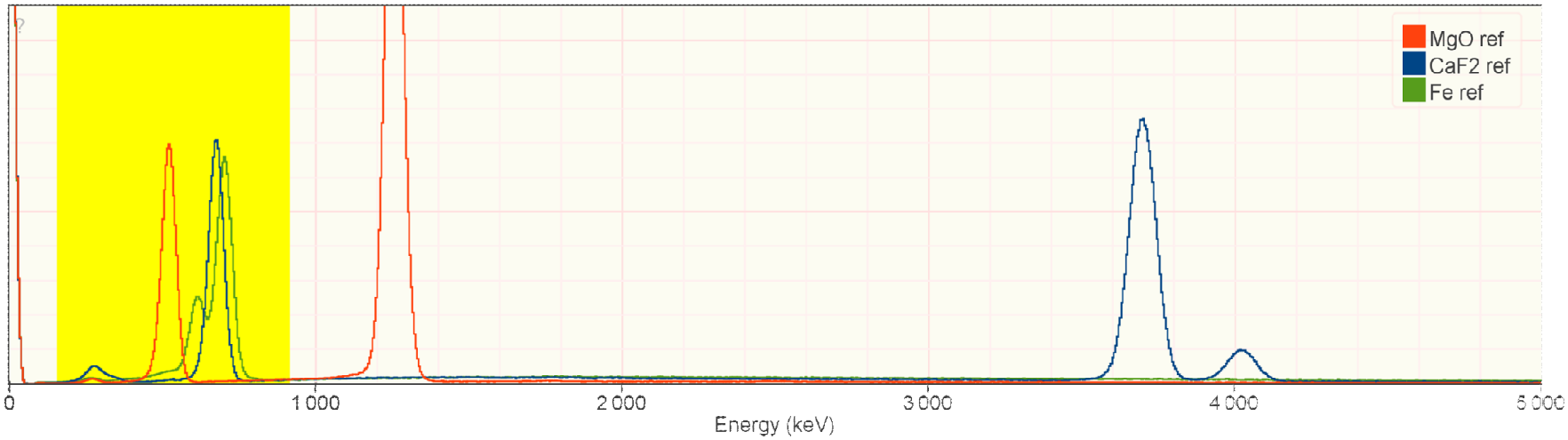
What is the problem?



These peaks are too close to each other.

Solution: Provide additional spectra which provide clear unobstructed perspectives of the obstructed peaks.

Solution



Fit CaF2 as a Ca reference, MgO as an O reference and Fe as a Fe reference to the K411 spectrum and to the unknown.

$$k_{unk,std} = \frac{k_{unk,ref}}{k_{std,ref}}$$